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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,628	03/04/2002	Hideomi Suzawa	0756-2450	6937

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EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/086,628

Applicant(s)

SUZAWA ET AL.

Examiner

Douglas A. Wille

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8, 9, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Na et al. in view of Ono et al. and Williams et al.

3. Na et al. shows the formation of a TFT (see Figure 5D and column 4, line 16 et seq.) with a gate electrode 12, and insulating layer 14, an undoped Si layer 16, a doped Si layer 44 and a conducting layer 451, a metal layer 471 and the stack is etched to form the structure shown. Although the structure is intended for a display, the transparent pixel electrode is not shown and a taper is not shown. Ono et al. show the formation of a TFT with the addition of a transparent pixel electrode (see cover Figure and column 7, line 65 et seq.) and show the etching of the transparent electrode down to the undoped Si layer (Figure 16). Ono et al. also show that it preferable to form the undoped Si layer with a taper (column 14, line 49) to prevent breakage (column 15, line 6). It would have been obvious to provide the transparent electrode as shown by Ono et al. since it is required for an operational device and to include the taper to make a more reliable device. Williams et al. show that for etching Si containing materials, which are the materials shown by Na et al., a Cl based gas is used (column 7, line 16). Since there is no distinction between various Si containing materials of Na et al. there would be no reason to change the gas since the same gas is used.

Art Unit: 2814

4. Claims 10 – 12, 16 – 18, 21 – 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Na et al. in view of Ono et al. and further in view of Williams et al.

5. Na et al. does not provide etching details and while Ono et al. provide some details of etching, Williams et al. show that for etching materials such as metals, insulators and Si (column 6, line 36) it would be possible to use etchants using  $\text{CF}_4$ ,  $\text{O}_2$ ,  $\text{SF}_6$  and  $\text{Cl}_2$  or mixtures thereof (column 7, line 4). It would have been obvious to use any of the etchants shown by Williams since they are known to be functional.

6. Claims 13 – 15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Na et al. in view of Ono et al. and Williams et al.

7. With respect to claim 13, Na et al. shows the formation of a TFT (see Figure 5D and column 4, line 16 et seq.) with a gate electrode 12, and insulating layer 14, an undoped Si layer 16, a doped Si layer 44 and a conducting layer 451, a metal layer 471 and the stack is etched to form the structure shown. Na et al. show that the conductor can be Al (column 4, line 53). Although the structure is intended for a display, the transparent pixel electrode is not shown and a taper is not shown. Ono et al. show the formation of a TFT with the addition of a transparent pixel electrode (see cover Figure and column 7, line 65 et seq.) and show the etching of the transparent electrode down to the undoped Si layer (Figure 16). Ono et al. also show that it preferable to form the undoped Si layer with a taper (column 14, line 49) to prevent breakage (column 15, line 6). It would have been obvious to provide the transparent electrode as shown by Ono et al. since it is required for an operational device and to include the taper to make a more reliable device. Na et al. does not provide etching details and while Ono et al. provide some details of etching, Williams et al. show that for etching materials such as metals, insulators and

Art Unit: 2814

Si (column 6, line 36) it would be possible to use etchants using CF<sub>4</sub>, O<sub>2</sub>, SF<sub>6</sub> and Cl<sub>2</sub> or mixtures thereof (column 7, line 4). It would have been obvious to use any of the etchants shown by Williams since they are known to be functional. Note that Na et al. shows the use of Al and Ono et al. shows the use of Cr, Ti, Ta or W (column 9, line 42) and it would be obvious to use any of the metallic conductors interchangeably.

8. With respect to claim 27, Williams et al. show that for etching materials such as metals, insulators and Si (column 6, line 36) it would be possible to use etchants using CF<sub>4</sub>, O<sub>2</sub>, SF<sub>6</sub> and Cl<sub>2</sub> or mixtures thereof (column 7, line 4).

9. With respect to claims 14 and 15, Na et al. show the metal layer 471 is Al (column 3, line 60) and Ono et al. show the metal layer d1 as being W or Ta (column 9, line 42). It would have been obvious to use the other metals as a design choice.

#### *Response to Arguments*

10. Applicant's arguments filed 7/28/04 are addressed to the amended claims which are considered above.

#### *Conclusion*

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period


Art Unit: 2814

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (571) 272-1721. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Douglas A. Wille  
Primary Examiner